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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,265	10/07/2003	Stefan Marinca	T0461.70041US00	6382
23628	7590	09/06/2006	EXAMINER	
WOLF GREENFIELD & SACKS, PC FEDERAL RESERVE PLAZA 600 ATLANTIC AVENUE BOSTON, MA 02210-2206			ROSSOSHEK, YELENA	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/680,265	MARINCA ET AL.	
	Examiner	Art Unit	
	Helen Rossoshek	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17, 23, 24, 26, 27, 29-31 and 35-37 is/are rejected.
- 7) ☒ Claim(s) 18-22, 25, 28 and 32-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>20060818</u> . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/7/03, 4/5/06</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

1. This office action is in response to the Application 10/680,265 filed 10/07/2003.
2. Claims 1-37 are pending in the Application.

Election/Restrictions

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-10, 17-37, drawn to a method for compensating for temperature effects by scaling and matching output voltage value of the circuit classified in class 716, subclass 2.
 - II. Claims 11-16, drawn to a method for compensating for temperature effects by scaling an output voltage of the circuit and correcting of the desired output voltage, classified in class 716, subclass 2.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions Group I and Group II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the method for compensating for temperature effects by scaling and matching output voltage value of the circuit (Group I) does not require correcting of the desired output voltage as

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claimed in the Group II. The subcombination has separate utility such as correcting of the desired output voltage.

5. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Steven Henry (Registration No. 27,900) on 08/10/2006 a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-10, 17-37. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10 and 17-29 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: it is not clear

"output value" (claim 1) of what in the circuit is scaled; or "said output" of what (claim 17). For examination purposes Examiner considers output voltage.

10. Claims 9, 10 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: it is not clear: a) what relationship between scaling the output voltage of the circuit and straight line; b) where in the space straight line intersects a fixed determined point. For examination purposes Examiner assumes that straight line is graphical representation of the relationship between the reference voltage and temperature of the circuit (as described in the instant Specification on the Page 8).

11. claim 27 is formulated unclear to what Applicant intent to mean; as per phrase "...tuning means is provided by means of a tuning DAC . . .", additionally, device DAC cannot be coupled "to one of said currents", but can be coupled to the source of current.

It has to be noted claims 2-10, 18-30, 29 are also rejected to for incorporating the aforementioned errors into the respective claims by claim dependency.

Claim Rejections - 35 USC § 101

11. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. Claim 36 is rejected under 35 U.S.C. 101 because the claimed invention directs to non-statutory claim invention, wherein carrier signal is not a proper machine, manufacture or composition of matter.

Drawings

13. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see Applicant's Specification, Page 6). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

14. Claims 20-22, 28 are objected to because of the following informalities:

claim 20 has insufficient antecedent basis for the term "the value of the constant current"; as per claims 21, 22, 28 the proper dependency has to be established as per terms "current" and "voltage".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. Claims 1-10, 17, 23, 24, 26, 27, 29-31, 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Marinca (US Patent 6,828,847).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1 and 17 Marinca teaches a method for compensating for temperature effects during operation of a semiconductor (within providing a bandgap voltage reference circuit for providing a temperature stable voltage reference (col. 5, ll.8-10)), circuit comprising: scaling an output voltage value of the circuit to a desired output value at a first temperature (within the bandgap voltage reference circuit 20 as shown on the Fig. 2, wherein the output voltage of the circuit is driven to a common first voltage level (col. 11, ll.25-30; col. 5, ll.40-45) by scaling the correcting PTAT voltage (col. 11, ll.45-47; col. 13, ll.11-20; col. 6, ll.3-4)); and matching the output value, at a second temperature, to the desired output value, whereby the desired output value at the first temperature remains unchanged (within providing **temperature stable** voltage

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reference (col. 5, ll.8-14) by trimming the proportion of the CTAT correcting current which is summed with the PTAT current (col. 9, ll.60-67) and supplying the second transistor until the desired output voltage is achieved not depending on the temperature (col. 10, ll.1-3)).

With respect to claim 31 Marinca teaches a semiconductor circuit adapted to provide compensation for temperature effects during operation (col. 5, ll.8-13), the circuit comprising a digital control means for: digitally scaling an output voltage of said circuit to a desired output voltage value at a first temperature (within the bandgap voltage reference circuit 20 as shown on the Fig. 2, wherein the output voltage of the circuit is driven to a common first voltage level (col. 11, ll.25-30; col. 5, ll.40-45) by scaling the correcting PTAT voltage (col. 11, ll.45-47; col. 13, ll.11-20; col. 6, ll.3-4), wherein calibration of PTAT current and CTAT current performed using programmable current DAC/digital-to-analog converter (col. 10, ll.1-3)); and digitally matching said output voltage value, at a second temperature, to said desired output voltage value, whereby said desired output voltage value at said first temperature remains unchanged (within providing **temperature stable** voltage reference (col. 5, ll.8-14) by trimming the proportion of the CTAT correcting current which is summed with the PTAT current (col. 9, ll.60-67) and supplying the second transistor until the desired output voltage is achieved not depending on the temperature (col. 10, ll.1-3), wherein calibration of PTAT current and CTAT current performed using programmable current DAC/digital-to-analog converter (col. 10, ll.1-3)).

With respect to claims 35-37 Marinca teaches providing and testing bandgap voltage reference circuit for providing a temperature stable voltage reference with temperature curvature correction including computer simulation, which performs by computer program (col. 18, ll.63-67; ll.60-62).

With respect to claims 2-10, 23, 24, 26, 27, 29-30, Marinca teaches:

Claim 2: wherein the step of scaling the output value is effected by the addition or subtraction of a constant voltage value (col. 10, ll.65-67);

Claim 3: wherein the constant voltage value is generated by forcing a constant current through a resistor of the circuit (col. 10, ll.48-49);

Claim 4: comprising generating the current from a balanced combined PTAT and CTAT current (col. 9, ll.56-67);

Claim 5: comprising generating the current from reflecting a reference voltage across the resistor (col. 12, ll.34-35);

Claims 6, 23: wherein the matching step is effected by the addition or subtraction of the difference between two balanced trimming PTAT and CTAT currents (col. 9, ll.56-67);

Claims 7, 24: wherein the trimming currents are such that at the first temperature the difference between each current is zero and the combined current value has a double slope compared to a slope value of each individual current (col. 12, ll.45-53);

Claims 8, 26: between the scaling and the matching step, comprising the additional step of tuning of the trimming currents such that the difference between the

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PTAT and CTAT currents at the first temperature is equal to zero (within correcting values I_{CR} (CTAT) and I_f (PTAT) to be equal (col. 12, ll.51-53);

Claim 9: wherein the step of scaling comprises scaling a straight line defined by two points to fit a straight line intersecting a fixed determined point at the first temperature (as shown on the Fig. 3 (col. 19, ll.1-16);

Claim 10: wherein the step of matching comprises rotating the straight line about the fixed determined point at the second temperature (Fig. 4; col. 19, ll.17-26);

Claim 27: wherein the tuning means is provided by means of a tuning DAC coupled to one of the currents, by adjusting a value of a user controlled input to the tuning DAC (within correcting values I_{CR} (CTAT) and I_f (PTAT) to be equal (col. 12, ll.51-53), wherein calibration circuits 21 and 22 shown on the Fig. 2 comprise **programmable** current DAC (col. 18, ll.35-37));

Claim 29: wherein the value of the user controlled input code is stored in memory (col. 18, ll.60-62);

Claim 30: wherein the value of the trimming currents providing the difference are stored in memory (col. 18, ll.60-62).

Allowable Subject Matter

17. Claims 18-22, 25, 28, 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if claims 18, 25, 32, 33 are rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if claims 20-22, 28 are rewritten to overcome the noted informalities, and if

claims 18-22, 25, 28 are rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

18. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or suggest comprising multiplexor for adding or subtracting a constant voltage value to/from output voltage value (claims 18-22, 28); wherein aforementioned multiplexor is coupled to two outputs of the DAC (claim 21); whereby control signal applied to the multiplexor controls the addition or subtraction of the difference between two balanced trimming PTAT and CTAT (claim 25); the addition or subtraction of the constant voltage value is controlled by a second input to each DAC (claim 32); the digital control comprises register, coupled to the inputs of each DAC, wherein the output values from the register determine the value of the input codes to each DAC (claims 33, 34); the transfer of the input codes from memory to the register is controlled by the digital control unit (claim 34).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Rossoshek whose telephone number is 571-272-1905. The examiner can normally be reached on 7:30-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner
Helen Rossoshek
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PRIMARY EXAMINER